Hobbies WEEKLY

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May 24th, 1950 Price Fourpence Vol. 110 No. 2847

Patterns on page 127 for a miniature model

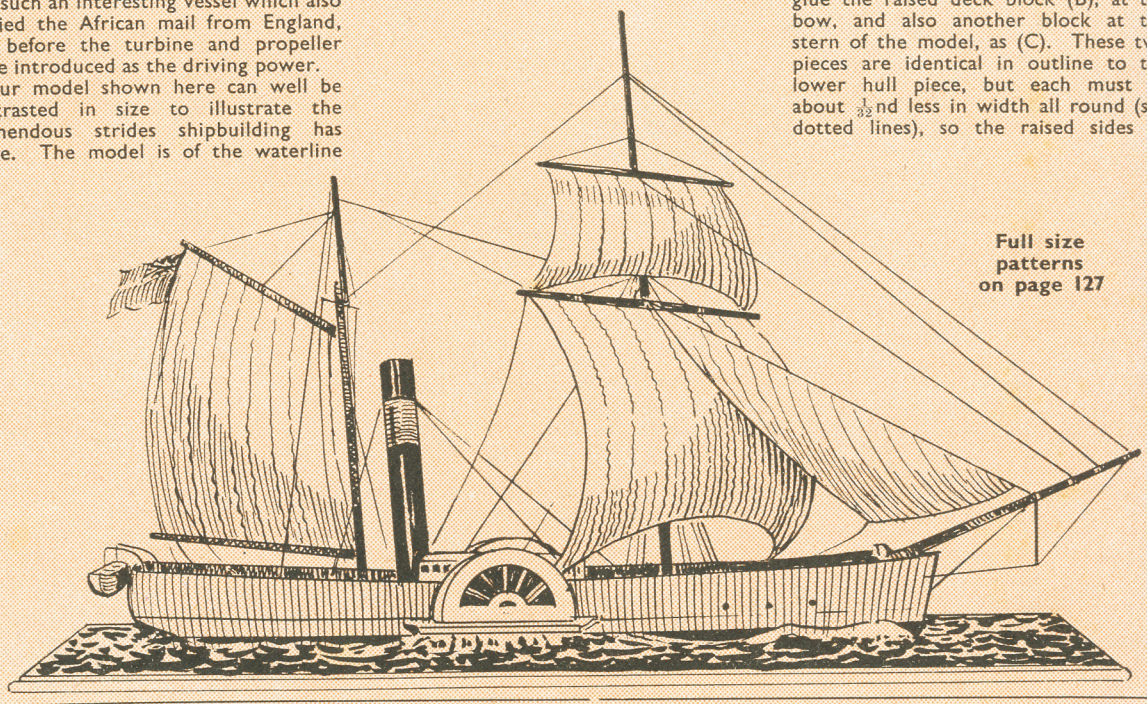
OLD-TIME PADDLE SHIP

IT was last January that we published in this journal a supplement design sheet of the liner 'Pretoria Castle'. This splendid vessel belonging to the Union Castle Line is engaged in the weekly mail service between England and South Africa. We mention these facts because we now present our readers and model makers with patterns for just such an interesting vessel which also carried the African mail from England, but before the turbine and propeller were introduced as the driving power.

Our model shown here can well be contrasted in size to illustrate the tremendous strides shipbuilding has made. The model is of the waterline type, and measures—without its base—13½ins. long overall and its height is 8ins. The plan at Fig. 1 and side view, Fig. 2, will be found very useful when assembling the various parts of the model. The full-size patterns, too, of many of the important parts, are given on cover iii.

The hull is a piece of ½in. thick wood cut to the shape of the two patterns (A) on the pattern sheet. Now, as we were unable to give the full-length diagram of the parts, we have cut it into two. All the worker has to do is to stick to the wood, each pattern (A), butting them together at the lines shown and marked by the crosses. This lower hull piece when completed will measure 9¾ins. long.

To the top surface of this main piece glue the raised deck block (B), at the bow, and also another block at the stern of the model, as (C). These two pieces are identical in outline to the lower hull piece, but each must be about $\frac{1}{32}$nd less in width all round (see dotted lines), so the raised sides or



Full size patterns on page 127

bulwarks can be glued on and come flush with the lower hull.

Therefore, first take a piece of ⅜in. wood 6ins. long and lay the already made bow portion of the hull on it, and draw round it to get an exact outline. Next take a piece of ¼in. wood 4ins. long and repeat the process for the raised stern block. Where the two pieces meet on the lower hull is indicated by the dotted line on the pattern sheet. Note the position of the masts on pieces (B) and (C).

To make the raised sides of the vessel use thin bendable plywood or stiff thin card which will be cut to the shape shown at (D) on the pattern sheet in two

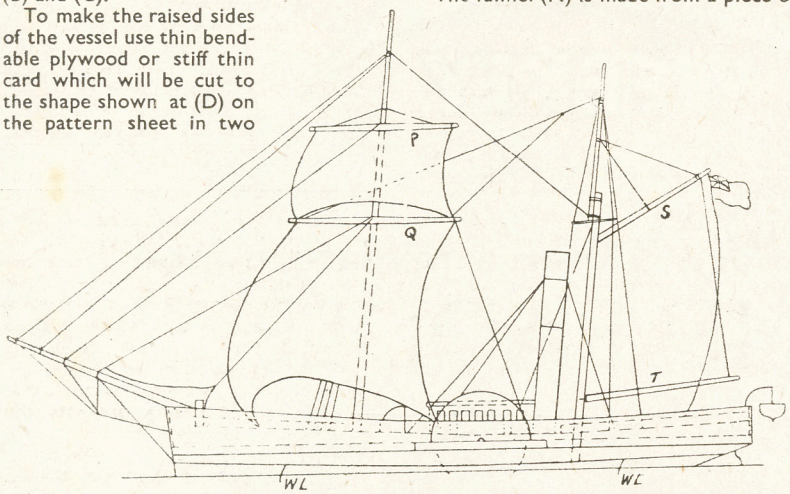


Fig. 2—Side view, with dotted lines of adjoining parts

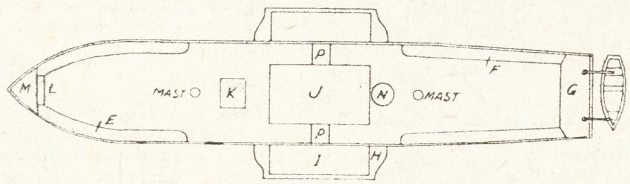


Fig. 1—Plan of deck and hull

sections. The plan of the ship, Fig. 2, and the view showing construction, Fig. 3, show how the bent sides appear when glued to the raised blocks at bow and stern. A large portion of the foremost side is shown cut away for sake of clarity.

The raised sides, seen at (D) on the pattern sheet, are shaped to slope towards the funnel. The stern board of thin wood is given on the sheet and is glued between the raised sides. The ribbon shown in outline is to be painted on later.

To stiffen the raised sides of the model two pieces as (E), and two pieces as (F), will be cut from ⅛in. wood and glued in at bow and stern respectively. The wide piece (G) is also cut from ⅛in. stuff and glued in to stiffen the stern board. It also takes the davits of the swinging boat over the stern.

Paddle Box

The paddle box frame (H) is of ⅛in. wood. Two are cut and glued to the sides in the position shown. On top of these frames glue the semi-circular pieces (I) representing the casing to the paddle-wheels. Two will be cut to the pattern given on the sheet, the markings shown being later painted on.

The engine room and cabin (J) can be cut as a solid block from ⅛in. wood and measures 1¾ins. by 1in., with windows and doors painted on. The shaped companion head (K) is a simple block, as given in two views on the pattern sheet. The upright (L) also on the sheet, carries the bowsprit and is of ⅛in. wood. Just in front of this piece (L) is a small angular piece (M) glued between the pieces (E) on the sides. Fig. 3 shows the position of all these parts.

The funnel (N) is made from a piece of ⅜in. round rod to the full-size given. The stern boat is shaped from a small block of wood ⅜in. in thickness to the outline given, the seats, etc., being either carved in and painted or just painted.

We give a pattern full-size of one of the davits for the boat, and pieces of suitable wire may be bent and fixed in the two holes shown in piece (G). Short pieces of thread or fine wire suspend the boat (see Fig. 2) plan and side view. The two masts are from ⅛in. diameter round rod, the fore mast being shaped to taper slightly upwards. The mizen will not be shaped at all, as there will be a top spar spliced to it, as seen in Fig. 2. The main mast is 7⅞ins. long; the mizen 4¾ins. long, and the top spar or mast 2¾ins., ½in. of this being used for splicing on the mast.

The cross spars supporting the sails are made from ⅛in. rod and taper towards the ends. The spars are given full size on the pattern sheet, as is the bowsprit.

Scale outlines of the sails are given in Fig. 4, to draw on parchment paper or ordinary cartridge drawing paper. Glue the sails to the spars as shown and bind with fine cord at places, excepting the foresail which will have cords attached. The rigging of the masts can be carried out with fine thread, the arrangement being taken from Fig. 2.

Painting the Model

In painting the model use ordinary oil paint or enamel. The hull should be black with a bright red waterline (marked W.L. in Fig. 2). The upper sides of the model above line of deck, should be painted cream. The deck is light brown lined up to represent the planking. The cabin is white with windows painted blue with black frames.

It should be mentioned that the little semi-circular blocks (P) on the pattern sheet are cut from ¼in. wood and shaped to represent the deck casing to the spindles carrying the paddle-wheels. Note their position on the plan, Fig. 2. The funnel is painted red with a black banding.

A base is made for the model from ⅜in. or ½in. wood, 14ins. long by 5ins. wide. A plastic substance such as Pyruma, suitable for moulding up to form waves, should be spread on the board and the model laid in it. All can be painted realistically at the finish. (130)

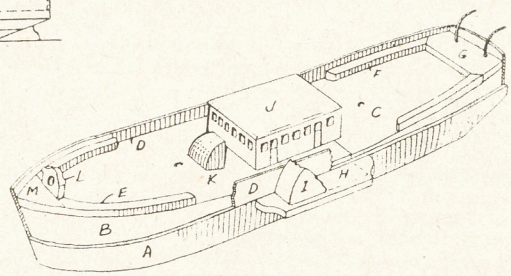


Fig. 3—Constructional details of hull and paddle box

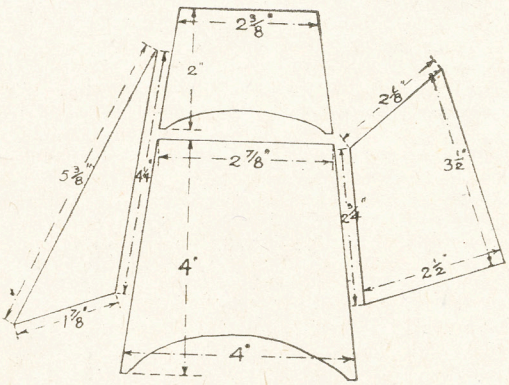
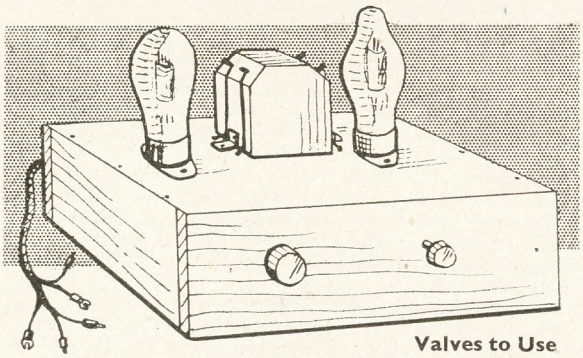


Fig. 4—Scale drawing of the sails

Design for a novel mechanical Race Game next week

Baby's cries upstairs transmitted downstairs by this

RADIO NURSEMAID



THE apparatus generally referred to as an electric nurse maid consists of a microphone, speaker, and amplifier, giving a good degree of amplification. The microphone is situated in the child's room, and the speaker in the living room. Cries or other sounds are then relayed and amplified, warning the parents that their attention is needed.

The amplifier described here can, of course, be used for other purposes. It will give very good results with a gramophone pick-up employed for playing records; with a suitable microphone, it can be used for 'home broadcast' items, including instrumental and vocal performances. It can also be added to a 1-valver or crystal set, to bring the volume up to good speaker strength.

Circuit Parts

The complete circuit is given in Fig. 1 and it will be seen that very few components are necessary. The volume control (a desirable refinement) can be of any value between about ·25 megohm and 1 megohm, though if a new one is being obtained ·5 megohm is most suitable. For coupling the valves, any ordinary low frequency coupling transformer can be used. The ratio of these components is usually about 1:3 or 1:5, and is not critical.

Some transformers only have Primary and Secondary indicated. With these, the primary is taken to the first stage valve plate and to H.T. positive. The secondary is taken to the output valve grid and Grid Bias. With all transformers slightly better results will usually be obtained when the secondary is connected in a certain way. The effect of reversing the two secondary connections should, therefore, be tried, even when the transformer is fully marked, as in Fig. 2.

A small on-off switch of any type is also required, and two valve holders. One should be a 4-pin type. If a pentode or tetrode valve is to be used for output, a 5-pin holder will be required here. If a triode is going to be used, a 4-pin holder will do. Alternatively, the 5-pin holder may be wired up as shown and the centre socket ignored.

Valves to Use

Fig. 2 will show the positions in which the valves are to be inserted. For the first stage, a general purpose low frequency amplifying valve can be used. The Osram HL2 is suitable, but many other manufacturers have valves equally satisfactory and any equivalent can be used.

For the output stage, a pentode or tetrode will give maximum amplification. A suitable valve is the Cossor 220HPT or any of its equivalents.

For many purposes a triode may be used here, though the overall amplification will be slightly reduced. A small power valve such as the LP2 is suitable. Alternatively, any valve to hand can be tried.

Chassis Construction

A tidy layout is obtained by using a chassis about 2ins. deep, and this can easily be made from plywood, with slightly thicker wood for the two short sides. A chassis 4ins. by 6ins. is amply large. Holes about 1¼ins. in diameter should be cut with a fretsaw for the valveholders, the sockets of which project below.

The underneath wiring is shown in Fig. 3. Small socket strips can be used for speaker and microphone connections, or four small terminals can be used. Provided the plywood is dry and has been varnished, it will be in order for the terminals to be mounted directly on the rear strip, leaving at least 1in. between each two terminals, with 3ins. or so between the nearer speaker and microphone terminals.

The volume control and switch are mounted on the front strip. All the battery leads can be taken through one hole about ⅜in. in diameter drilled in the centre of the rear strip. For these leads, insulated flex cut to suitable lengths can be used.

Wiring Details

No difficulty should arise in connecting up correctly, following Fig. 3. Suitable insulated connecting wire can be obtained from the popular stores and soldering (avoided by some constructors) will prove easy if cored solder and an iron almost, but *not* quite, red-hot is used. It is necessary to secure the valveholders as shown, because the dissimilar socket-spacing prevents the valves being inserted in the wrong manner.

Four leads pass through the chassis, and reference to the diagrams will make the connecting up of these quite clear. After checking the wiring against the diagrams, the unit is ready to try.

Battery Connections

For high tension, a 120 volt battery will provide most volume, though a 90 volt battery is good, and satisfactory results for some purposes will be

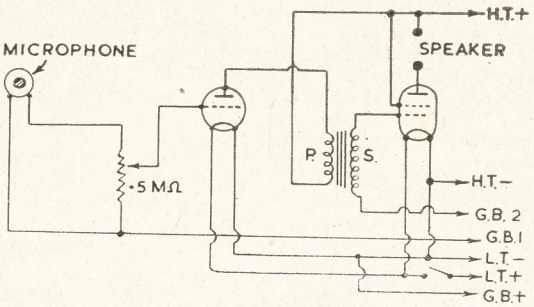


Fig. 1—Full theoretical circuit

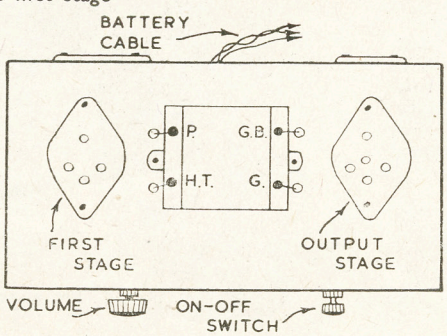


Fig. 2—Top plan of the unit

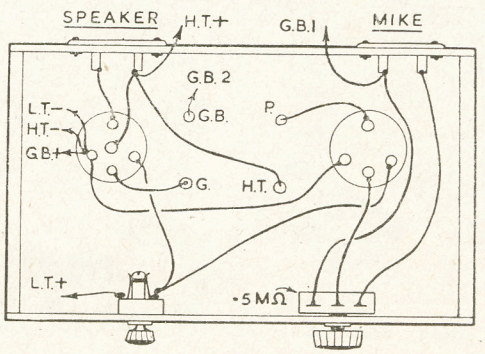


Fig. 3—Complete wiring diagram

obtained with a 60 volt battery. The grid bias voltages used will have to be found by trial because they depend upon the high tension voltage and exact valves used. Normally, 1·5 to 3 volts will be best for G.B.1 and 4·5 to 7 volts for G.B.2.

Select the highest value of grid bias which can be applied without causing distortion, or too severely reducing volume. The higher the grid bias voltages used, the longer will the high tension battery last. An increase in 3 volts bias on a pentode output valve can double the life of a H.T. battery.

Valve Insertion

Insert the valves before connecting the batteries. This is necessary because with some types of valveholder it is possible to touch the pins on the sockets in the wrong position, when trying to insert the valves, and if filament contact is made to the anode socket the valves may be damaged, or the primary of the transformer burned out.

For low tension, use a 2-volt accumulator. All the batteries can be situated at any convenient point, possibly in the cabinet, if a record player is being made.

Mike and Speaker

Any permanent magnet moving coil speaker with transformer can be used. For a pentode valve, a pentode speaker transformer is desirable, the impedance of this being higher than that used for a triode power valve. However, speaker transformers usually have several tappings, so the most suitable impedance can be selected. With the correct impedance, volume and quality of reproduction will be at its best. The speaker should be enclosed in a cabinet, or it cannot give its best.

For record-playing purposes, reproduction will be a little high-pitched. If this is objected to, connect a ·01 mfd. condenser across the loudspeaker sockets on the amplifier.

Many different types of microphones are available, and each will give satisfactory results if properly used. A moving coil microphone is a good type, but *must* have a matching transformer, just as a moving coil speaker must. Actually, a small moving coil speaker will be found to function well as a microphone.

Carbon microphones give maximum volume, but must be used with a carbon-microphone transformer. The latter has a step-up ratio of about 1:100, and a low-resistance primary, which is connected to the microphone and a small dry battery. This enables a steady current to flow through the microphone, and without this a carbon microphone cannot function.

An earphone with cover removed will function as a magnetic microphone, and does not require any battery or transformer. Its disadvantage lies in the fact that it does not pick up sounds at much distance. This may be overcome by using one of the old type moving iron speaker units, if to hand, with a fairly large cone. With this, conversation at quite a distance from the 'microphone' will be heard.

Twin flex can be run from the microphone to the amplifier, the leads being kept well away from those connected to the speaker.

If instrumental or vocal items are performed, the performers should be in a separate room, if possible. If in the same room as the speaker, the sound from the latter should not be allowed to reach the microphone directly. If it does, continuous howling will be caused.

Pick-Up for Records

The popular electromagnetic pick-ups are generally best for ordinary use, being comparatively inexpensive and robust. With one of these, more than ample speaker volume will be obtained with the volume control at maximum.

If the amplifier is switched on with nothing connected to the 'Mike' sockets, howling will probably arise, unless the volume control is turned down, and this does not indicate a fault. For preference, the unit should not be switched on with no speaker connected since the open anode circuit is eventually detrimental to the output valve.

Some useful articles for the home made from

SCRAP WOOD AND DOWELS

WITH a supply of prepared dowelling, some scrap wood, and a few simple tools, the craftsman can keep himself employed for many hours in making simple fitments that are useful in every home. Suggestions are given for the making of five such items, but although definite sizes have been quoted for them the measurements can be varied to suit individual needs. The keen reader will also see that the type of item described does not exhaust the possibilities of dowelling as a woodwork material.

Book-trough

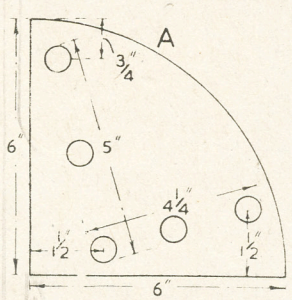
The two ends are of ⅜in. or ½in. thickness, each being cut from a piece 6ins. square. The quarter-round shaping at the front can be taken out with a fretsaw, and to ensure an even curve the two pieces of wood may be tacked together while the sawn edges are glass-papered.

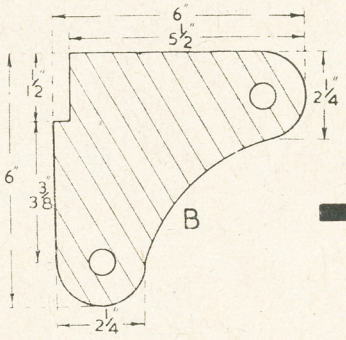
As books tend to be heavy, dowelling of not less than ½in. diameter should be used for the trough. Five lengths will be needed, and holes for these must be bored in each end.

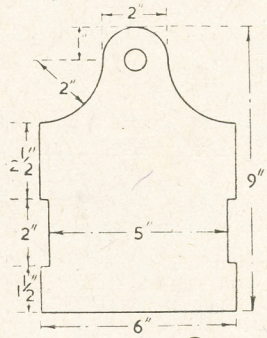
The lowest hole has its centre at 1½ins. in and ¾in. up from the back bottom edge, as shown on drawing (A). The front dowel has its centre point at 1½ins. from the bottom edge, while the top dowel centre is at ¾in. from the top edge. The distance apart of these holes is shown on the drawing, and it will be seen that the two remaining dowels are spaced midway between those already mentioned.

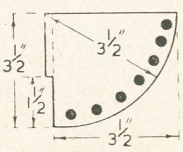
In length, the dowels must be 9ins. plus the combined thickness of the ends. Dowel ends can be slightly eased with glasspaper to make a good hand-tight fit, then a little glue is dabbed on them before they are forced into their holes.

If it is thought that the end-grain showing on the quarter-round ends is unsightly, each dowel can be allowed to project ¼in., and this projecting part of the dowel slightly hollowed out round the edge. With the book-trough assembled in this way it will appear as if there are five small bosses on each end.









Towel-airer

As before, the two ends are cut from a 6in. square piece of ½in. softwood. In the original model these ends were actually cut from a margarine-box.

A slot 1½ins. deep by ½in. wide is cut on the top back corner, and the remainder of the front is shaped out to some simple outline with the fretsaw. A suggested shaping is given on drawing (B).

Towels are not particularly heavy, so the size of dowel used does not greatly matter, but ½in. diameter will be found very suitable. A hole of the required size is bored in each arm of each end, these holes having their centres at 1⅛ins. from the extreme ends.

Two 18in. lengths of dowel are glued into these holes, while a similar length of 1½in. by ½in. wood is screwed into the slot at the top to make the fitment more rigid. The completed article can be fixed to the wall by screws through the back bar, or by brass hangers.

Sink Soap-dish

This is shown on drawing (C), which practically explains itself. The back is cut from ¼in. wood of 9ins. by 6ins. overall measurements. Its shape is clearly shown at (C). A small hole should be bored towards the top of the back so the fitment may be hung over a convenient nail.

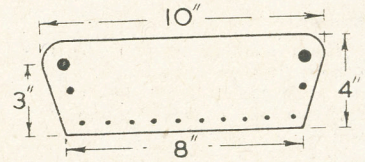
The two shaped sides fit into the slots on the back. Before they are fixed seven 6in. lengths of ¼in. diameter dowel are glued into holes spaced equidistant round the shaped edge of the soap container. This is then screwed into its slots so its lower edge comes level with the bottom edge of the back.

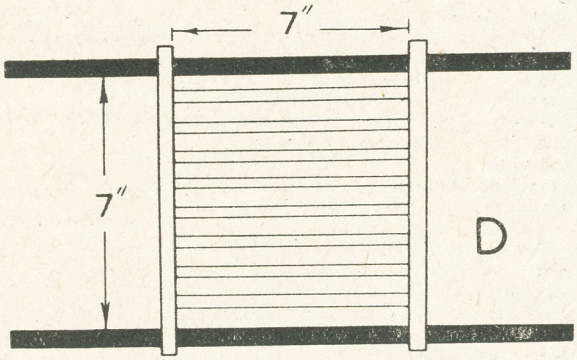
Bath Soap- and Sponge-holder

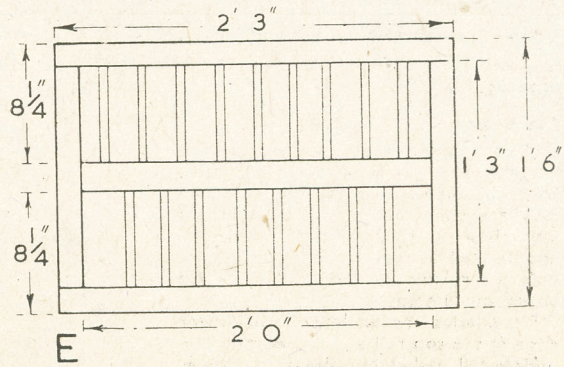
Two end plates (10ins. by 8ins.) are bored with twelve ¼in. diameter holes as shown on drawing (D). Towards the top of these plates two ½in. diameter holes are drilled.

Twelve lengths of ¼in. dowelling are glued into the lower holes so there is a distance of 7ins. between the inside faces of the ends. The two thicker dowels (shown black on drawing) are then forced through their holes. These thick dowels need to be about 2ft. in length, to rest on the two sides of the bath. Their full

(*Continued foot of page 118*)







Some interesting and helpful notes about Curves in MODEL RAILWAYS

ONE often hears remarks about 'scaling down' the prototype to arrive at the sizes required for working in a given scale, but, whilst considering the inevitable smallness of radius of O and OO scale curves, the writer was prompted to 'scale up' the model curves to the full-size railway, allowing 6ins. to the mile on the diagram.

This scale was chosen as it is that used in the 6in. Ordnance Survey sheets, and the diagrams drawn could be compared with the curves of the real railway as they appeared on the writer's map of his own district.

On transferring the diagrams (here shown full-scale—6ins. to one mile) to the 6in. survey map, the effect was positively shattering! As will be seen from the football field (450ft. by 300ft.) drawn true to scale, the 4ft. 6in. radius curves of O gauge are just nicely accommodated in the length of the field when scaled up. Yet we still ask a 'Pacific' locomotive to haul a twelve coach train around such an inordinately sharp curve, and to pull well into the bargain!

Radius for Curves

The 4ft. radius curve in OO is admittedly slightly better, and as the scale speeds are only about half that of O gauge (in model feet per second), the disproportion of both curve and speed is not so acute.

The O gauge 4ft. 6in. curve scales up to a 145ft. radius (!) and the 4ft. curve in OO to a 305ft. curve. Comparing these curves with the 10 chain (minimum unchecked) radius curve drawn to the same scale (6ins. to 1ft.), one cannot but be impressed with the absurdity of even the very largest of our model curves.

The reproduction of the 10 chain curve of the real railways would require a radius of approximately 10ft. in OO gauge and about 15ft. 9ins. in O gauge; both of which are quite out of the question except out-of-doors or in the very largest railway room.

The '1,400ft.' curve of which an arc is shown, represents the minimum prototype radius curve for high-speed working and would be represented in OO scale by a curve of about 25ft. radius, whilst in O gauge it works out to approximately 36ft. radius! Just a sheer impossibility in either gauge.

Train Lengths

Train lengths too, provided an interesting comparison when sketched in to a scale of 6ins. to 1ft. and 'placed' on the survey map. A 12-coach main-line train and loco were assessed at about 900ft., and it was found that it would reach almost half round the O gauge oval of track shown, being twice as long as the 'soccer' pitch.

The distance between the two long vertical lines is 3ins., which equals ½ mile in the scale of the diagram which is reproduced in these pages full-size for comparative purposes.

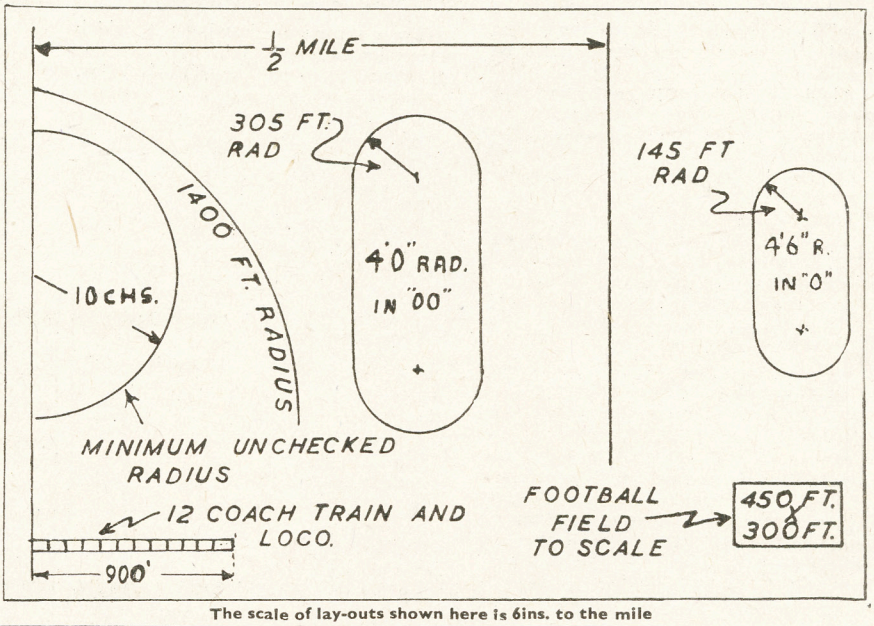
Reversing the scaling, we find that our train and loco would be about 12ft. long in OO scale, and 21ft. long in O gauge; whilst the football field becomes 6ft. by 4ft. in OO scale and 10ft. 6ins. by 7ft. in O gauge—the size of what many of us have to do with for our whole layout!

Troubles Overcome

The study of these curves and areas should make one and all fully appreciative of the colossal difficulties under which the greater majority of us work. Difficulties which are completely insurmountable unless ones' railway is laid in the Albert Hall or similarly large building.

Compromise we must, and compromise we do, but it is not until we actually see our model curves drawn in on a map of a district with which we are really familiar, that we really comprehend just how great the need for compromise and tolerance is.

Try these diagrams on a map ('6in.' scale) of your district and see for yourself how things stand. You will be surprised!



The scale of lay-outs shown here is 6ins. to the mile

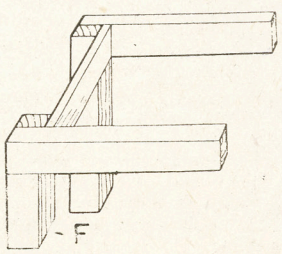
Wood and Dowels—(*Continued from page* 117)

length has not been shown on the drawing.

Plate-rack

Wood 1½ins. square is used for the uprights and ¾in. square for the rails, with ⅜in. diameter dowelling. Outside rails are connected by screwing them into slots on the uprights, while the middle rail is half-lapped into place. Before securing the joints all holes are bored and the dowels fitted.

Nine holes are drilled on the lower edge of the top rail and top edge of the middle rail, and eight holes on the lower edge of the middle and top edge of the bottom rail. Holes are spaced an equal distance apart, and are bored to a depth of ¼in.



Two such frameworks will be needed. For each framework seventeen 7¼ins. long dowels are cut, glued into their respective holes, and the framework assembled (drawing E).

The rack is completed by adding six spreader rails, 6ins. long, ¾in. wide and ¼in. thick. These are screwed on to the projecting thicknesses on the inside of the uprights, level with the various rails. Drawing (F) shows one corner of the completed framework. (134)

Leather workers could undertake this useful

LADY'S HANDBAG

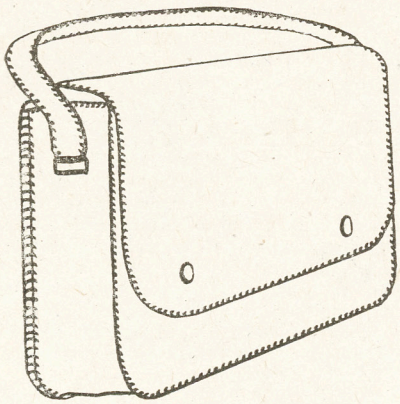


Fig. 1—Completed bag and handle

A HANDBAG in leather will outlast more than one bag of the mass-produced type. Also, as the constructor knows how the bag is made made up, he can attend better to any repairs that become necessary. A simple bag for the handyman to make is shown at Fig. 1.

You will need a small skin, obtainable from leather or handicraft suppliers. Many different colours and figured patterns are available, so it is advisable to take the future user along with you to make the choice. Do not have a leather which is very limp or too thin.

The bag will need a lining of skiver. Choose a colour to match the leather—it need not be the same colour: brown and maroon go well together, for instance.

Materials You Need

While you are in the shop you should buy about 12 yards of thonging, preferably the same colour as the leather. Get the plastic covered variety. You will also need two D rings for handles and a pair of fasteners for the flap and you will have plenty of choice here. The D rings, which do not require stitching, being merely pushed through a slit in the leather and secured, are quite strong enough for a handbag.

If you do not possess a set of stud-fastening tools, or do not wish to invest in a set, there are several kinds of fasteners which are simple to fix, and are of neat appearance.

For tools, you will need a sharp knife or razor blade, scissors and a leather punch, the latter to make holes for the thonging.

Mark out on the leather the pieces required, as shown in Fig. 2. Use a pencil on the rear of the leather. It is best to cut out paper patterns first, then you can arrange these on the skin in order to use it to the best advantage.

Of the two panels which you cut to the same size, one is for the front, the other for the inner pocket. Cut the handle and gusset in one piece if possible. If you must join two or more pieces, leave sufficient overlap to give the necessary strength.

For Shoulder Strap

Some ladies prefer a shoulder-bag. If this is the case, the 'handle' will have to be about 4ft. long, and this will take much thonging. So try to persuade her that shoulder bags are out of fashion!

Cut out the pieces carefully, then arrange them on the skin of skiver which is to be used for lining the handbag. Place the inner or rough sides of each together, as these surfaces have to be stuck. Make some flour and water paste, or use one of the proprietary pastes. As you stick each piece, cut it out, not too closely, and smooth the skiver to dispel any wrinkles. Allow to dry naturally, then trim off the skiver edges.

Next comes the construction of the bag. First, thong the top edge of the inner pocket. Here are a few hints about thonging. Punch the holes of just sufficient diameter for the thonging to pass through easily. Make the holes an equal distance apart and at an equal distance from the edge. To determine what length of thonging you will require, multiply the length of the leather to be thonged by 2½. Where several layers of leather have to be thonged, multiply by 3.

Start in the centre and work towards each edge in turn. Finish off by threading the remaining thong under the last three 'stitches', pull tight, and snip off the spare thong.

Having thonged the inner pocket top edge, place it in position on the back panel. Apply a little glue or rubber solution around the edges, and stick the two panels together. In the same way, stick the gusset around the inner pocket. You will notice that the gusset is longer than necessary, so trim this off, and then round the edges. It is best to use strong steel paper clips to hold the leather in position until punched and thonged.

Now thong the edges of the back panel completely. It is possible to do this with one long piece of thong. Start in the middle of the top edge, working round to the bottom of the bag. To finish off, push both ends through to the inside, and tie a knot.

Front Panel

The front panel goes on next. Put this on carefully, or the bag may assume a crooked appearance. Do the thonging in two parts, firstly the bottom and sides of the front panel, then the tops of the gusset and the top of the front panel, all in one piece.

Fix the D rings on the gusset about 2ins. from the top edge. For the handles, punch holes and thong up to about 3ins. from each end. Taking each end in turn, push it through a D ring, and finish off punching and thonging (see Fig. 3).

Lastly the fasteners. Whatever kind you use, pay special attention to their fixing. Punch the flap holes first, and then you can locate the places on the front panel. If you are using press studs for the first time, experiment on an old piece of leather, not on the bag itself. This is much better than ruining your completed or nearly completed piece of work.

There is the handbag complete. The rear compartment is for identity card, ration book and so on, the main compartment for the usual impedimenta which ladies carry! (133)

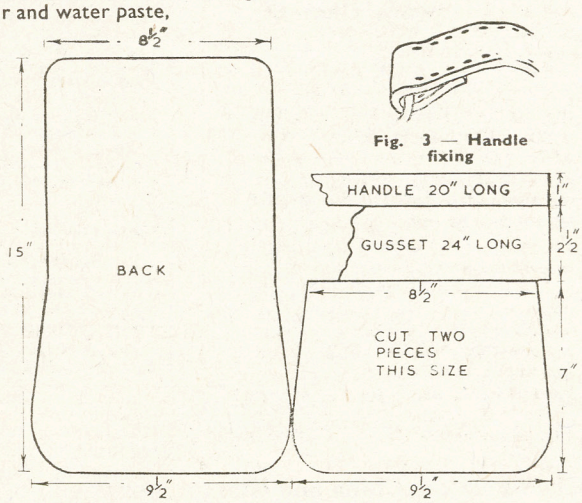


Fig. 2—Shape and dimensions of the various parts

Fig. 3 — Handle fixing

Fretmachine Hint

WHEN using a treadle fret-machine, you will find that if put against the wall, the driving wheel catches. A good thing to stop this is to get a block of wood 1¾ins. by 1in. and ¾in. thick and put it behind the back leg of the machine. Press it against wall and the wheel will not catch any more.

Some Useful Home-made Cements

Wood-block Floor Cement

MASTIC asphalt is sometimes used for this purpose, the blocks being dipped therein before being laid, alternatively a mixture of 2 parts pitch and 1 part creosote is used hot, as also is bitumen.

Shellac Cement without Spirits

A CHEAPER shellac cement which is useful for fixing paper labels, etc., to tin and to glass which is exposed to moisture can be made by boiling 1oz. of borax in 16ozs. of water and adding 2ozs. of shellac finely powdered; finally boiling in a covered vessel till the shellac is completely dissolved.

Oriental Jewel Cement

THE cement largely used in the East for uniting jewels, and glass with metals is made by dissolving 5 or 6 pieces of gum mastic about the size of peas in just as much methylated spirit as will render the solution liquid. Then make up a second solution by softening some isinglass in water, drying it, and dissolving as much of it as will make a 2oz. bottle of strong glue; finally adding a small piece of gum ammoniacum of the size of a pea. Mix these two solutions and store in a well-closed bottle. When used the mixture must be made liquid by standing the bottle in hot water.

Earthenware Cement

FUSE together 2 parts of shellac and 1 part of Venice turpentine and cast the mixture into sticks ready for use. The broken edges of the joint must be heated as well as the cement when the latter is being used.

Antique China Cement

FOR joining valuable articles of china which are for show only and will not be expected to contain hot water, an excellent cement may be made by mixing together the white of an egg thoroughly beaten to a froth, with quicklime and grated cheese to form a stiffish paste. The mixture should be used whilst quite fresh, and is water-resisting but only moderately resistant to heat.

Glass Flux for China and Glass

MIX 3 parts of red lead, 2 parts of silver-sand and 3 of boric acid crystals, fusing the mixture, then grinding it and applying it to the broken edges with thin gum tragacanth. The article should be heated slightly during the process.

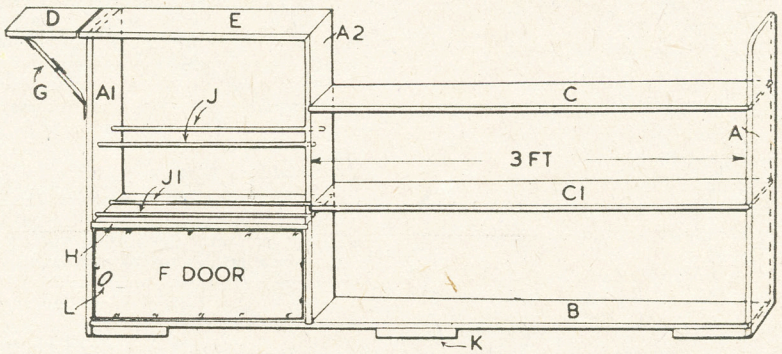
Jewellers' Diamond Cement

A HOT-WATER-PROOF cement used by jewellers for fixing precious stones is generally made of alcohol, gum galbanum, isinglass and gum ammoniacum, in the usual proportions of 4, 1, 1 and 8 parts respectively. There are many different recipes for the purpose, each one being preferred by the user, but the one cited above may be taken as a fair average. Naturally, the two gums should first be dissolved in the alcohol before being added to the water-soluble isinglass.

Sensible Bedroom Cabinet

NECESSITY arose when a certain piece of furniture was required. It had to be modest in price and quick and simple to make. The sketch shows the result and it cost well under 20/-.

Sufficient seasoned wood was obtained at an auction sale when a large table was bought for 10/-. In addition, there were hinges, screws, stain and hardboard to purchase. The table top was made up of boards 8½ins. by ¾in. by 60ins. long.



REQUIREMENTS

2 ends (A and A1)—2ft. 2ins. by 8½ins.
1 end (A2)—2ft. ⅛in. by 8½ins.
1 bottom (B)—4ft. 6¼ins. by 8½ins.
2 shelves (C and C1)—3ft. ⅜in. by 8½ins.
1 flap shelf (D)—8½ins. by 8½ins.
1 table (E)—1ft. 6¼ins. by 8½ins.
1 door (F)—1ft. 3⅞ins. by 8½ins.
1 flap support (G) (oak)—9ins. by 1in. by ¼in.
1 cupboard top (H)—1ft. 4⅜ins. by 8½ins.
4 dowelling rods (J and J1)—1ft. 6ins. by ½in. dia.
6 feet—9ins. by 3ins. by ¾in.
1 door handle (L)—To choice.
1 table extension (see below)—1ft. 6¼ins. length of hardboard.
4 doz. screws, 1¾ins., No. 9.
3 flapjack hinges, 1in., with screws.
2 door hinges, 2ins. by ¾in., with screws.
1 door ball snap.

NOTE:—If extension table is fitted, flap will have to be increased to suit.

Over the cupboard, there are two racks for damp shoes and the bottom shelf will take care of dry shoes and slippers. The middle and top shelves are for books.

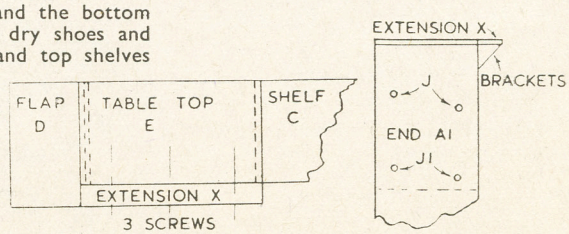
As the whole piece was carried out in 8½in. timber, the bedside table part was found to be rather on the narrow side and additional width was made. A table flap was also included for early morning tea, etc. Its main purpose was to ensure room when needed; bedside tables have a habit of filling up.

The only part requiring care in making was the flap support. This should be made out of oak or similar hardwood. The centre hinge should be screwed on before cutting in half. The two end hinges may then be screwed on and one of them screwed on end (A1) and about 6ins. down. The other hinge position is a case of trial and error. Again, about 6ins. is a starting point.

The support possibly looks as though it had been fitted on the wrong way, but it is perfectly safe and more easily fitted, as shown.

The whole was backed with ⅜in. hardboard. All letting-in was done by marking off and cutting with a tenon saw the required depth and then cleaning out with a chisel. All joints were glued and screwed. Screwhead countersinks, etc., were filled with Alabastine and papered off when dry.

When finished, the surface was given two coats of stain varnish. If a better finish is required, the wood can be planed and papered before starting work, and afterwards polished. (149)

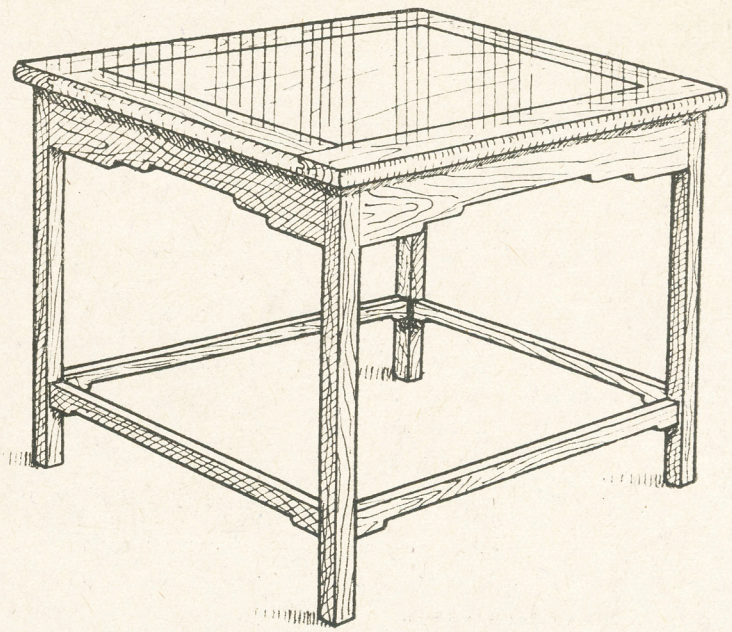


A practical job for the home carpenter is this

OCCASIONAL TABLE

THIS simple table makes up into a robust piece of furniture and will be found a useful addition for those odd corners of a room in need of 'that something extra'. There is nothing very difficult in the construction; all the frame joints are ¼in. wide mortise and tenons, and the only matter calling for a little extra care is the fitting of the panel to the top frame. This is explained in the text.

The original table was extremely economical, being made from dry ash cut from the cross-bearers of an old lorry bed that would otherwise have been used for firewood! Oak is probably the best wood for the job, but almost any reasonably good-looking hardwood may be used which will take polish. It is best to choose a wood if possible to match with the furniture beside which the finished table will stand.



Approach to Construction

Small table frames are easily spoiled by slight inaccuracies in the jointing, resulting in a twisted construction. It is important that, after planing the pieces of timber to size, the four legs and the rails in two lots of four each should be marked off together for correct lengths and mortice and tenon positions.

A good way to do this is to place the four pieces of wood side by side in a vice and square the lengths and joint positions across, using a set square and a scribing knife, or pencil where it will be visible on the finished job. The cutting of tenons and all chisel work must be square and clean: mortise and tenons should be a smooth friction fit.

Before any parts are glued together they should be skimmed off lightly with a smoothing plane and glasspapered with a fine glasspaper block. This makes for a cleaner job than if all the glasspapering is left until the table is being prepared for polishing.

The legs are each 17¼ins. long, 1in. by ⅞in., and have the lower rails 3¼ins. up from the floor. The wide top rails are fitted flush with the top of the legs. The ¼in. wide mortises are cut through to meet at the corners, at which the ends of the tenons must be bevelled off to 45 degrees.

Rail Joints

Cut the top rails to 2¾ins. wide, ⅝in. thick: the longer pair being 15¾ins. from shoulder to shoulder, and the shorter pair 13¾ins. The long pair have tenons ¾in. long with a ⅜in. haunch at the top edge. The shorter pair have tenons just a little less than this with similar haunches.

The cutting of these tenons must be carefully executed, for being deep and narrow there is no room for error. It is better to cut them a little full in thickness than the opposite, and pare down carefully to fit the mortises. Beware of a twisted tenon. It is poor practice to have to pack a joint if too loose. Note that the rails fit flush with the outside faces of the legs: that the outside shoulder is ¼in. deep and the inside shoulder ⅛in. deep, total with ¼in. tenons, ⅜in.

In order to lighten the appearance and still retain the deep joints, the top rails are cut down to 2¼ins. in two steps of ¼in. each, with rounded corners (see Figs. 2 and 4).

The lower rails, 1in. by ¾in., are lightened in a similar manner, but have only one step 3/16in. deep. They are the same length as the top rails with similar tenons the same length and thickness, the full depth of the rails (see Fig. 2).

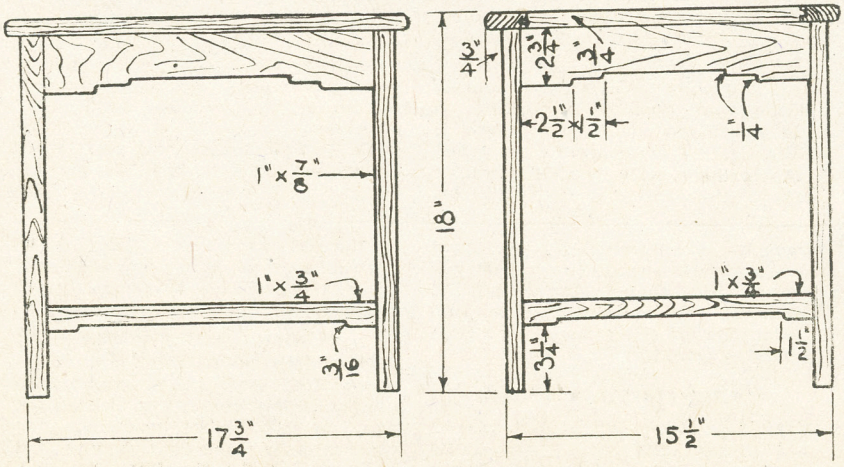


Fig. 4—Side and front elevation with details of dimensions

Top Fixing

If the top is to be fixed to the framework by the normal method of screwed 'L' shaped blocks (Fig. 3a), cut out the necessary ¼in. wide by ⅜in. deep slots in the top rails on the inside, ⅜in. down from the top edge.

Glue up the two long sides first, and cramp tight while the glue sets. If you do not possess four screw sash cramps, it is advisable to make some wooden ones, as shown in Fig. 5. The pressure is applied by means of the folding wedges, tightened with a hammer. Do not put so much pressure to the frames that the lower rails begin to bow.

When the side frames are set, clean off surplus glue, skim off where necessary with a smoothing plane at the top rail joints, and proceed to glue in the short

cross rails, so completing the framework. Cramp together with sash cramps, or as shown in Fig. 6, with a tight cord around.

Check for 'square' with a strip of wood marked off diagonally from corner to corner on top, and use a large set square at the joints. When satisfied that all is well, and the frame stands solidly on a level surface, put aside for a day or two; in the meantime construct the table top.

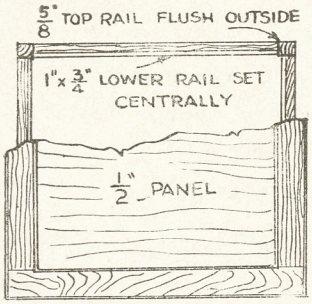


Fig. 1—Cut-away plan view

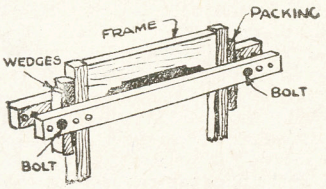


Fig. 5—Gluing the rails in a frame

Panelled Top

The top measures 19½ins. by 17ins. and consists of a frame grooved to carry a ½in. thick panel. Plane the frame pieces to 1⅞ins. by ¾in., and run a ¼in. square groove on the inner edges centrally. Cut the ¼in. mortise and tenon joints in line with the grooves. Notice that they are stopped tenons, i.e., do not go right through to the outer edge. Do not forget the small filling-up piece to be left with the tenons on the outside to close the groove where it shows.

Put the frame together and check up that the joints fit snugly. Next prepare the panel.

This can be a piece of ½in. faced plywood, or a single board if one can be found wide enough. The original panel was of beech—three pieces 5ins. wide rubbed together with glue to make a 15in. board.

If you make one like this be sure the edges to be glued are dead straight and true and perfectly square. It is not necessary to cramp the pieces together if the edges fit well, the glue is thin, and the rubbing tight. Lean the board against a straight strip while the glue sets. A board so glued is stronger than a natural full-width board.

The edges of the panel have a ¼in. rebate worked on them to fit the grooves in the frame. It is important that the panel should fit the frame perfectly. The limits of the rebate are easily marked by placing the frame over the panel and scribing round the inner edge with a knife, or mark with a sharp pencil. After cutting the rebates just down to the lines so marked, work a small vee on the upper arrises to relieve the joint.

Try the frame together with the panel in the grooves. If there are slight gaps at the tenon joints the panel is a little too wide. However, beware of cutting away too much in rebating. A slack panel in width and length is unsightly. When gluing the frame and panel together, place glue on the bottom edge of the panel only so that excess glue will not fill the vee joint. Clean off any excess with hot water before it sets. Cramp together.

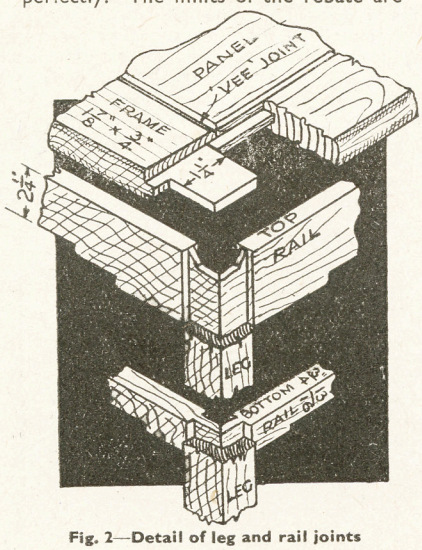


Fig. 2—Detail of leg and rail joints

The edge of the frame is slightly rounded (Fig. 4), after which the whole top surface should be skimmed off with a finely set smoothing plane and fine glasspaper block. The table top may be fixed by any of the three methods shown in Fig. 3, but the usual method, employing 'L' blocks is, perhaps, the best, as it allows for slight shrinkages and exerts a constant pressure.

Finish

Wax polish is recommended for hard wearing and easy replacement in the event of damage, but french polish imparts a finer finish, especially if a fine grained wood has been used in construction.

The whole table needs to be carefully prepared. First a good glasspapering with very fine glasspaper, always working with the grain, never across it. Second, for french polish the grain needs to be filled with plaster of paris or any of the good commercial fillers. A suitable stain may be applied after a further light rubbing down, when polishing may commence.

The original table, made of English ash with a beech panel was first treated with linseed oil mixed with 5 per cent Colron mahogany wood dye. Vigorous wax polishing a week later brought out the strong grain of the ash in relief, while the beech panel toned to a deeper brown, the whole having a most pleasing effect. (145)

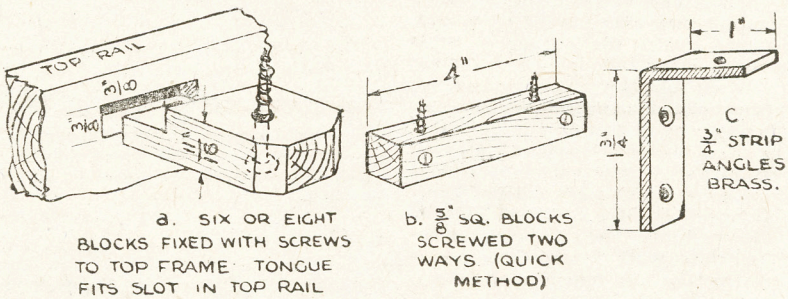


Fig. 3—Three methods of fixing the top without any visible screws

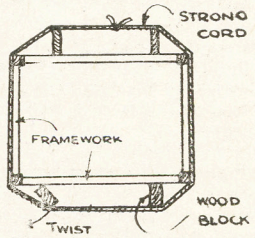


Fig. 6—Plan showing cord as a gluing cramp

Ready-made Masts

AS a hint to boat makers who are stuck for a mast on their models, they are advised to cut off about half a penny paint brush, and use that ready-made.

Pictures Worth Keeping

IF you have an old calendar which has a picture worth keeping, it is best to frame it. Take a piece of plywood about ½in. larger than the picture, stain it a suitable shade, then glue on the picture, leaving a ½in. margin. Cover with Cellophane and glue at back. Fix a strut behind as a stand, and it is ready.

Fixing Hammer Heads

HERE is a way in which to fix an axe or hammer head which may cause trouble by flying off when in use. Screw on the end of the shaft a plate from an old rubber heel. When screwed firmly down, the head will never again cause trouble.

Clock Face Figures

IN modern clocks, actual figures are not often used. Used gramophone needles hammered in so that the ends just protrude from the face, look well. Tap them carefully with a light hammer so as not to damage the actual face of the clock.

Before you go to camp take care to

OVERHAUL YOUR PRIMUS

THE whole point about camping is that you depend entirely on your own efforts and if the primus stove gives a despairing gasp in the middle of cooking breakfast, it means no breakfast at all. If you check your stove before the season starts, this sort of thing will not happen to you. Spares and replacements, with the exception of the burner, cost only a few coppers and it is a small price to pay for safety.

Spreader

First examine the flame spreader. This is the cap with holes around the side which fits on top of the burner. If it looks at all badly burned, it is advisable to buy a new one and carry it along as spare. Next remove the nipple and fit a new one. This is important, for it is on the nipple the whole success of the stove depends.

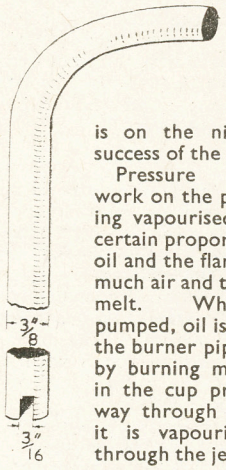


Fig. 1—A pipe key

Pressure paraffin stoves work on the principle of burning vapourised oil and air in certain proportions. Too much oil and the flame is smoky, too much air and the burner would melt. When the stove is pumped, oil is forced through the burner pipes, first warmed by burning methylated spirit in the cup provided. On its way through the warm pipes it is vapourised and issues through the jet as invisible gas.

Air Intake

On its way up to the flame spreader, this jet takes in a certain amount of air, dependent on the force of the jet. Since this air intake cannot be regulated, the only way to ensure the right amounts are burned together is to see the nipple is the right size. As the nipples are cleaned with wire prickers the holes grow too large, the flame becomes smoky with constant blocking and cleaning of nipples which soon makes the stove useless. By far the best way is to fit a new nipple and carry a spare.

The burner, that is the set of pipes to which the flame spreader and the nipple are attached, is seated on to the body of the stove on a soft metal washer. Put a spanner on to the hexagonal part of the burner, just above the spirit cup, and you will probably be able to give it half a turn. If there is a suspicion of a leak, buy a new washer and fit it.

Next unscrew the pump and remove its plunger. The leather washer is screwed on to a brass holder fitted loosely on to the plunger. Pump efficiency depends on the leather being soft and pliable and secure on its seating.

Non-Return Valve

The non-return valve at the bottom of the pump can cause trouble and should certainly be checked. On some types of stove the whole pump can be screwed out but in others the pump body is securely soldered. In the first kind the removal of the valve is easy but in the latter it is something of a problem.

A key to remove both nipples and valves can be made quite simply from $\frac{3}{8}$in. mild steel rod. At one end a $\frac{3}{16}$in. slot is cut and the other end is bent at right angles to form a handle (see Fig. 1). On the other hand these keys can be bought quite cheaply.

With the key unscrew the valve in the bottom of the pump. Touch will have to be used to find it, for it is impossible to see. Like the burner, the non-return valve is seated on a metal washer which spreads slightly. Sometimes the valve has to be fished out with a bit of wire, but more often it will fall out.

Stripping the Valve

Once out the valve can be unscrewed into two halves. One end has a slot for a screwdriver and the other the keyway. The screwdriver end is just a cylinder with holes in the side through which air enters the stove body. Inside the cylinder is a plunger tipped with a leather washer. This works up and down on a spring and the leather pad seats on the valve body when the two halves are screwed together. These are shown separated at Fig. 2.

Through the valve body is a hole admitting air from the pump. Pressure lifts the leather away from its seating against the tension of the spring. As pump pressure drops at the end of the stroke, the spring forces the leather back on its seating and pressure inside the stove holds it there.

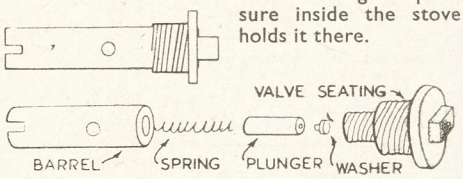


Fig. 2—Parts which form the valve

The biggest snag to look for here is wear on the leather. Perhaps it does not seat properly or a frayed edge may prevent it moving freely just at the critical moment in camp. The leather can be lifted out, in many cases, and put back the other way round, but it should be renewed if it is badly worn. Underneath the filler cap you will find another washer. Check this to see it is in good condition. Change if necessary.

If all these points are checked and parts replaced where needed your primus will serve you well for the rest of this year. One word of warning. When buying spares make sure they are right for your type of stove, for these materials are not interchangeable.

A One-Man Exhibition

THIS delightful range of models and fretwork is an exhibition in itself, although it was completed by one man—Mr. T. Smith of 7 Station Avenue, Bolton. Every one is made from our designs, galleons, locomotive, St. Paul's Cathedral, ships, wheel match box, wheelbarrow pincushion, etc. Mr. Smith started when he was 17 and his first model was a 17ft. long Indian Palace. After a break of 30 years he has now become an enthusiastic user of the fretsaw again and made the St. Paul's Model, from our design, in two weeks. His ambition is to form a model and fretwork club in Bolton, so if any other readers in the district are similarly interested they should contact Mr. Smith. Or any firms who could make use of such an adept craftsman. Perhaps too, they would like to help him with his idea of making a scale model of Bolton Parish Church.

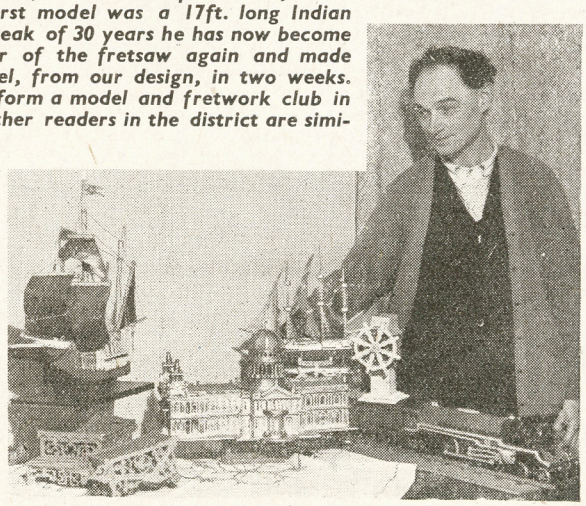


Photo: Courtesy of The Bolton Journal

The family pictures would look nice in this

TRIPLE PHOTO FRAME

ALTHOUGH this frame has been designed to hold photos, it could be easily altered and made suitable for a picture or a mirror. The frame is made with two end rails of thicker material than the rest of the parts; and to these rails are framed top and bottom rebated rails, while narrow rebated rails are also fixed on the inner edges of the end rails. When the frame is intended for photographs the opening is divided with rebated rails. A frame of this kind is usually made to hold cabinet size photos; it will not look well with less than two or three openings. Often four or even six are provided, the length being increased in proportion.

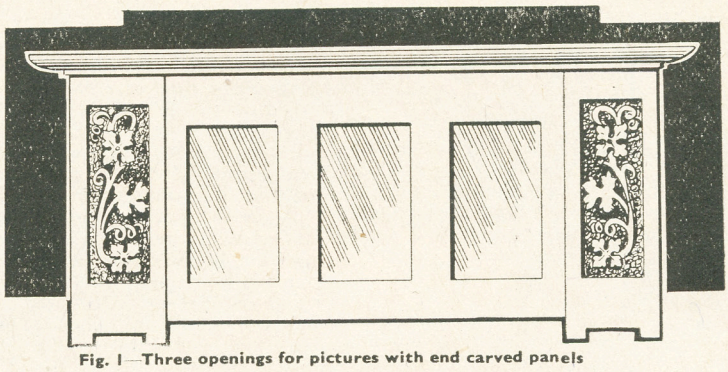


Fig. 1—Three openings for pictures with end carved panels

For Photos or Mirror

The frame shown at Fig. 1 and Fig. 2 is made with three photo openings. The frame for a picture or mirror is made in a similar manner, but the rebated rails which form the divisions between the photo openings are omitted. And whereas in a photo frame certain dimensions have to be observed in forming the openings, in a picture or mirror frame the size of the opening may be adjusted as desired.

Size of Parts

To make a photo frame of the design shown in Fig. 1, the following parts will be required. Two end rails 10½ins. long by 3½ins. wide and a top rail—moulded, 2ft. 2¼ins. long by 2¼ins. wide by ¾in. thick. Top rail 1ft. 7½ins. long by 2ins. wide, bottom rail 1ft. 7½ins. long by 1½ins. wide, two end rebated rails 6¾ins. long by 1in. wide, and two dividing rebated rails 6¾ins. long by 1½ins. wide, all of ½in. wood.

In construction the inner edges of the top, bottom, and inner end rails, and both edges of the dividing rails should be rebated, as shown in Fig. 3, to form recesses for the glasses and photographs. The top and bottom rails are then dovetail lapped into the end rails, as shown at (B) Fig. 2 and in detail Fig. 4. It will be noticed that half only of each face of the frame, front and back, is given here in Fig. 2.

The Rails

The lapped portions of the joints on the ends of the top and bottom rails are cut half the thickness of the rails with a tenon saw or fretsaw, while the dovetail recesses in the end rails are chiselled out. The end rebated rails are lapped into the rebates in the top and bottom rails, and fit against the end rails. The dividing rails are also lapped into the rebates in the top and bottom rails.

It will be well to carve the end rails before proceeding further and a pattern is shown in Fig. 5. Its actual size being 6ins. by 2⅜ins. Draw in the simple leafwork on to paper, and transfer it by means of carbon to the wood. Turn the pattern over and make the second outline in the same way with the carbon paper. The pattern given in Fig. 5, is for the left hand panel, and should be reversed for the right hand.

Carved Work

The carving is fairly straightforward, but to interpret the design correctly, some care must be given to the modelling. The groundwork should be taken to a depth of ¼in. The main stem of the design is lowered where it goes behind the leafwork. The stem, too, must be rounded to look natural. The background may be finished rough with a matting tool. All the parts should be carefully finished before fixing.

The bottom edges of the end upright rails are shaped with the fretsaw and the extreme top rail should be shaped to some simple profile, like that shown in Fig. 2. The ends of the rail are cut and shaped to the same profile as the front part. First fix the top and bottom rails to the end rails, securing with glue and screws.

Rail Fitting

Then fix the end rebated rails in place, skew-nailing them to the top and bottom rails and driving long but fine wire nails into the end rails, as shown in Fig. 3. The inner rebated rails are also skew-nailed to the top and bottom rails, and the extreme top rail—or shelf, as it may be called, glued and screwed from above.

If the frame is to be used for photographs, separate backs should be fitted to each opening, and clips used for holding them in place. The size of the glass for the three openings will be 6½ins. by 4½ins.

A good plan to make the pictures or mirrors more dust proof is to paste a piece of stiff brown paper over the whole of the back to cover the openings. If this paper is all slightly dampened before pasting down it will stretch drum tight when dry.

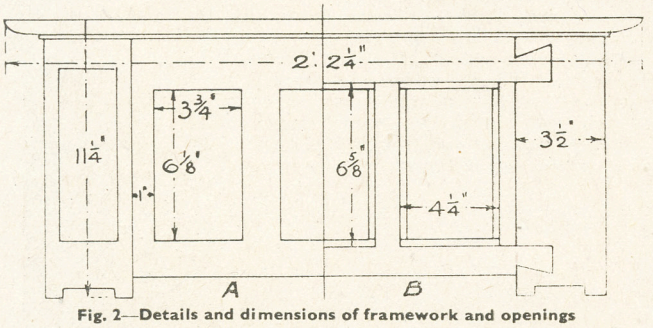


Fig. 2—Details and dimensions of framework and openings

Fig. 5—The decorative carved panel work

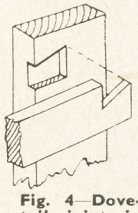


Fig. 4—Dovetail joint in the rails

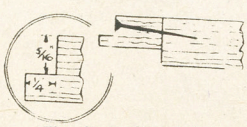


Fig. 3—Nailed joint

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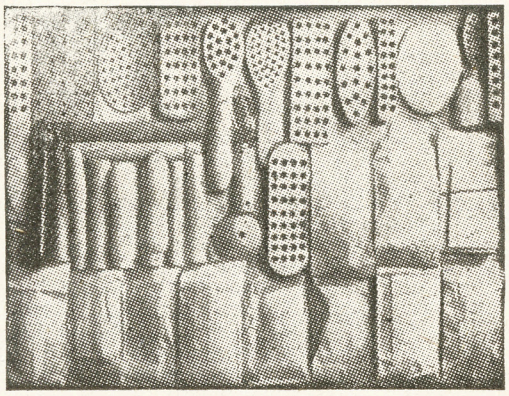

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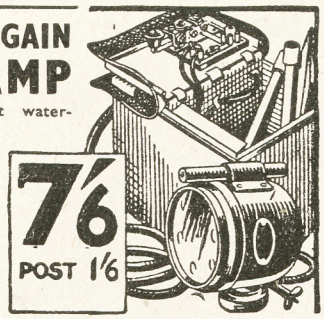

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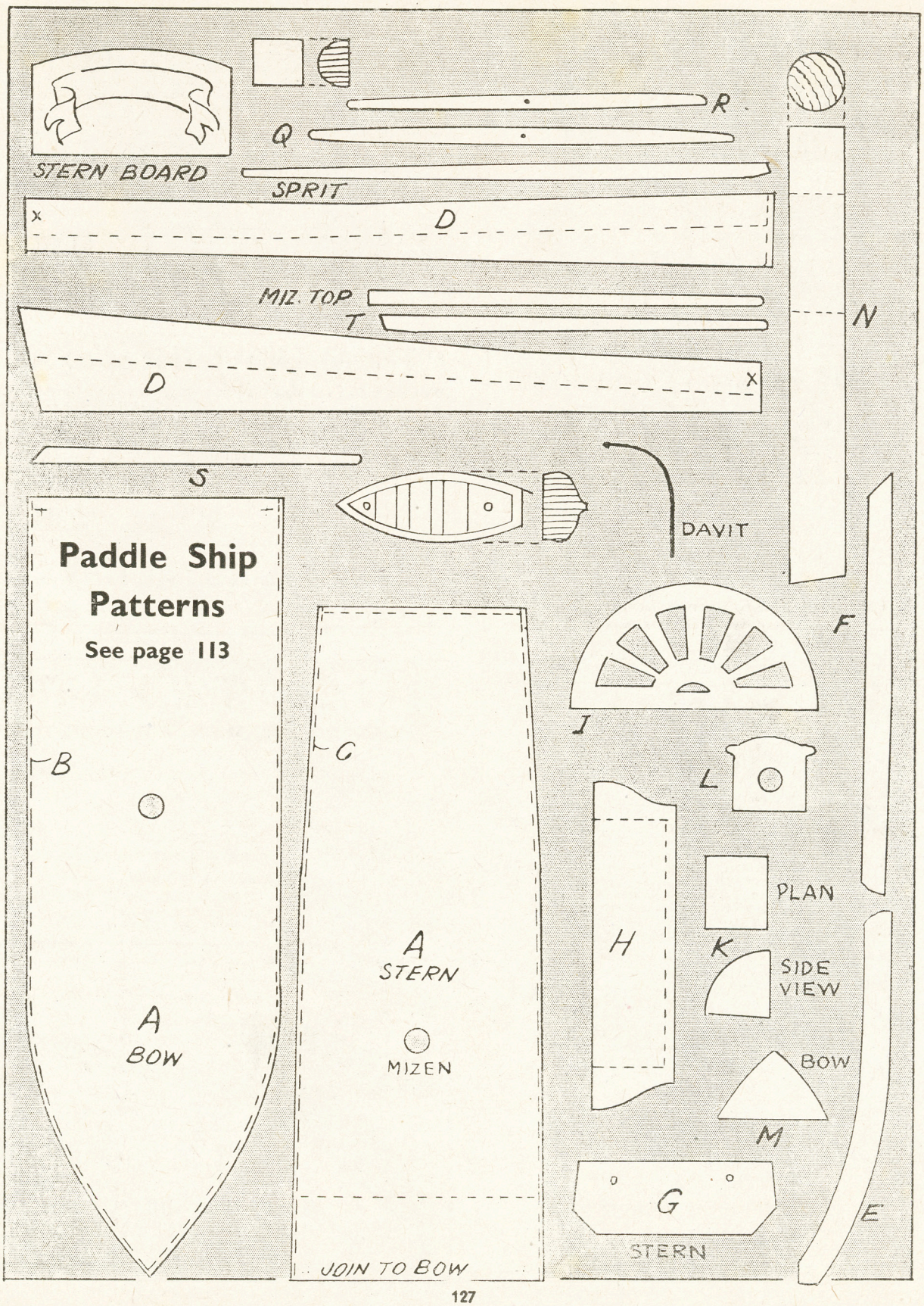
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